

IN THE CLAIMS:

Please amend the claims as follows:

1. (Previously presented): A method for differentiating mesenchymal stem cells into cells that produce steroid hormone-producing enzymes, comprising stimulating the mesenchymal stem cells, in the presence of cAMP, by transfecting the cells with a vector encoding a steroidogenic factor 1 (SF-1) wherein the steroid hormone-producing enzymes are selected from the group consisting of p450scc, p450c17, HSD3b1, StAR, 3 $\beta$ -HSD, p450 c21, p450 11b1, and HSD3b6.

2. (Cancelled)

3. (Previously presented): The method of claim 1, wherein the mesenchymal stem cells are derived from bone marrow.

4. (Previously presented): The method of claim 3, wherein the mesenchymal cells are derived from human.

5. (Previously presented): The method of claim 1 wherein the stimulating by SF-1 in the presence of cAMP is implemented *in vitro*.

6-7. (Cancelled)

8. (Previously presented): The method of claim 5 further comprising culturing the cells that produce steroid hormone-producing enzymes and recovering steroid hormone from the culture medium.

9-10. (Cancelled)

11. (Previously presented) The method of claim 1 wherein the hormone produced is progesterone, androstenedione, or androgen.

12. (Previously presented) A method for differentiating mesenchymal stem cells into steroid hormone-producing cells, comprising stimulating the mesenchymal stem cells, in the presence of cAMP, by transfecting the cells with a vector encoding a steroidogenic factor 1 (SF-1), wherein said hormone is selected from the group consisting of progesterone, androgen, and androstendione.

13. (New) A method for differentiating mesenchymal stem cells comprising stimulating the mesenchymal stem cells, in the presence of cAMP, by transfecting the cells with a vector encoding SF-1 wherein steroid hormone-producing enzymes selected from the group consisting of p450scc, p450c17, HSD3b1, StAR, 3 $\beta$ -HSD, p450 c21, p450 11b1, and HSD3b6 are produced.